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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
GLENN, KIMBERLY E	

ART UNIT	PAPER NUMBER
2817	

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/051,144	SHAMSAIFAR ET AL.	
	Examiner	Art Unit	
	Kimberly E Glenn	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 1947*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7 and 12-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7,12-15,17 and 18* is/are rejected.

7)☒ Claim(s) *16 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 6 is objected to because of the following informalities: Claim 6 is dependent upon claim 51, which does not exist. Examiner assumes that applicant wants claim 6 to depend on claim 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6, 7, 12-15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al US Patent 6,686817 in view of Liang et al US Patent 6597265 (of record) in view of Turunen et al US Patent 5,543,764.

Zhu et al disclose in figure 24 a tunable (bandpass) filter comprising a input 238, and output 240, a plurality of parallel resonator (242 244 246 248) serially coupled to each other and to the input and output; a plurality of tunable capacitors (250 252 254 256) each capacitor being coupled to one of the resonators. The input includes a first microstrip 238 having first end capacitively coupled 262 to the first resonator 242 and the output includes a second microstrip 240 capacitively coupled 264 to the last resonator 248. The tunable capacitor comprises a first electrode 64, and tunable dielectric film positioned on the first electrode 76, a second electrode 70 positioned on a

surface of the tunable dielectric film opposite the first electrode 64 and substrate 62. The first and second electrode is separated by a gap74. (Figure 6) Each of resonators includes a micristrip lines. Inherently, the resonators are mounted on a substrate. The tunable dielectric film comprises barium strontium tianate or a composite of BST. (See figures 1, 5, 6, 24 and column 4 lines 59 through column 5, line16, column 6 lines 18-34, and column 8 lines 40-49)

Thus, Zhu et al is shown to teach all the limitation of the claim with the exceptions of the loss tangent, for operating frequencies ranging from 1.0 GHz to 10 GHz, ranging from .001 to .005, the loss tangent, for operating frequencies ranging from 10 GHz to 20GHz ranging between .005 to .01, the loss tangent, for operating frequencies ranging from 20 GHz to 30 GHz, ranging from .01 to .02, a means for coupling non adjacent resonators, the coupling means comprising a series connection of a tunable capacitor and conductor, the coupling means comprising a microstrip having the first and second ends capacitvely coupled to the resonators,.

Liang et al disclose a varactor having a ferroelectric layer comprised of a thin film, thick film, or bulk ferroelectric material such as Barium-Strontium Titanate or a BSTO composite. These materials exhibit a low loss tangent. For frequencies ranging from about 1.0 GHz to about 10 GHz, the loss tangent would range from about 0.001 to about 0.005. For frequencies ranging from about 10 GHz to about 20 GHz, the loss tangent would range from about 0.005 to about 0.01. For frequencies ranging from about 20 GHz to about 30 GHz, the loss tangent would range from about 0.01 to about 0.02. The tunable dielectric material has a tunablitiy in the range from 10% to 80% when

biased by an electric field of 10 V/m. (column 8 lines 40-65 and column 9 lines 30-46 of Liang et al)

Turunen et al disclose in figure 1, a bandpass filter having non-adjacent resonator coupled using a transmission line 5. The transmission line art capacitively coupled to the resonators by tunable capacitor 6 and 7. Turunen state that the attenuation of the band pass filter is required to be low at the desired signal frequency but it must be able to attenuate strongly the undesirable image-frequency signal usually located in the proximity of the 3 dB limit frequency of the filter. Widening the passband reduces the transmission losses of the filter while simultaneously reducing also the attenuation in the mirror frequency. These contradictory requirements have been solved by adding one or more additional transmission zeroes to the transfer function of the filter, the zeroes being located at the frequency of the undesirable signal.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to replace the tunable dielectric material of Zhu et al with the tunable ferroelectric material as taught by Liang et al since examiner take notice of the equivalence of the tunable dielectric material of Zhu et and the tunable ferroelectric material of Liang et al for their use in varactor art and the selection of any of these known equivalents to provide means of tuning a capacitor would be within the level of ordinary skill in the art.

One of ordinary skill in the art would have found it obvious to provide the bandpass filter of Zhu et al with a means for coupling non adjacent resonators as taught by Turunen et al.

The motivation for this modification would have been to advantageously add transmission zero to the filter transfer function in order to obtain the desired frequency characteristics in a filter from the same field of endeavor. (Column 1, line 54 through column 2 lines 38)

Allowable Subject Matter

Claims 16 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly E Glenn whose telephone number is (571)-272-1761. The examiner can normally be reached on Monday-Friday 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571)-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kimberly E Glenn
Examiner
Art Unit 2817

keg

Robert Pascal
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Technology Center 2800